

An Innovative Example of Roundabout Implementation in Iida City, Japan

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1. Background and Objectives

Background

- To innovate roads and intersections to cope with future traffic demand.
- To implement a roundabout intersection in order to resolve the challenge of maintaining a five-road intersection function.
- To implement the roundabout while taking account of the signal control of the existing intersection and smooth traffic control during construction. (First-time construction in Japan)

Objectives

- To study construction procedures to safely and smoothly transform the existing signalized intersection into a five-leg roundabout while securing traffic flow.

3. Implementation

Understanding of traffic characteristics

Traffic flow was surveyed to understand the present traffic characteristics to be used in the design to switch the signalized intersection to the roundabout intersection without interrupting the flow of traffic.

What has been done during implementation

a) Operation of existing traffic signals

- An implementation (construction work for the conversion) was carried out by making use of existing traffic signals to the maximum extent possible and by taking factors into account such as safety, cost, and the health care of traffic guards in winter while disturbing the traffic flow.
- The traffic lights existing on the circle section of the roundabout were moved to new location that was visible to drivers and pedestrians and did not hinder the construction work.
- Before the construction of the central island, existing traffic lights were removed and the roundabout intersection was brought into operation.

b) Minimum traffic control

- A one-way road around the traffic island was constructed while restricting the traffic to one-side by making use of signal control and traffic guards in order to minimize the restricted area.

c) Restriction of large vehicle traffic

- While detouring the traffic, the width of the detouring roads was limited due to limitations of the road shoulder and large vehicle traffic was restricted to avoid the entry of the large vehicles into the detouring roads.

d) Ensuring the traffic line of pedestrians

- Since this intersection is located near the Iida railroad station, there are pedestrians walking across the intersection and the traffic line for them was ensured during construction.

e) Switching to roundabout operations

2. Intersection

Towa-cho intersection in Iida City, which was selected as the area where the roundabout would be implemented, is located near Iida station and has a relatively large number of pedestrians crossing the intersection. In the morning and evening, there is a significant amount of traffic.

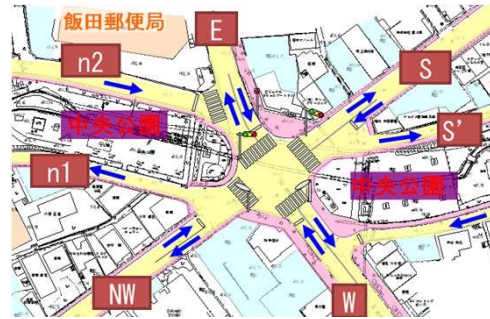


Fig.1 Before Innovation

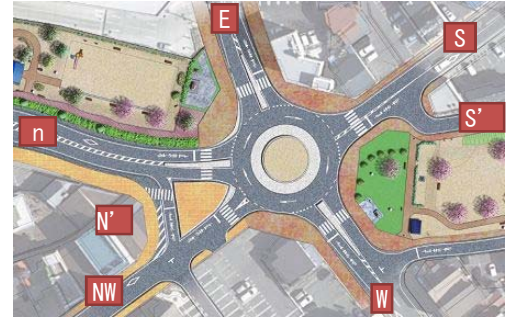


Fig.2 After Innovation (Planned Image)

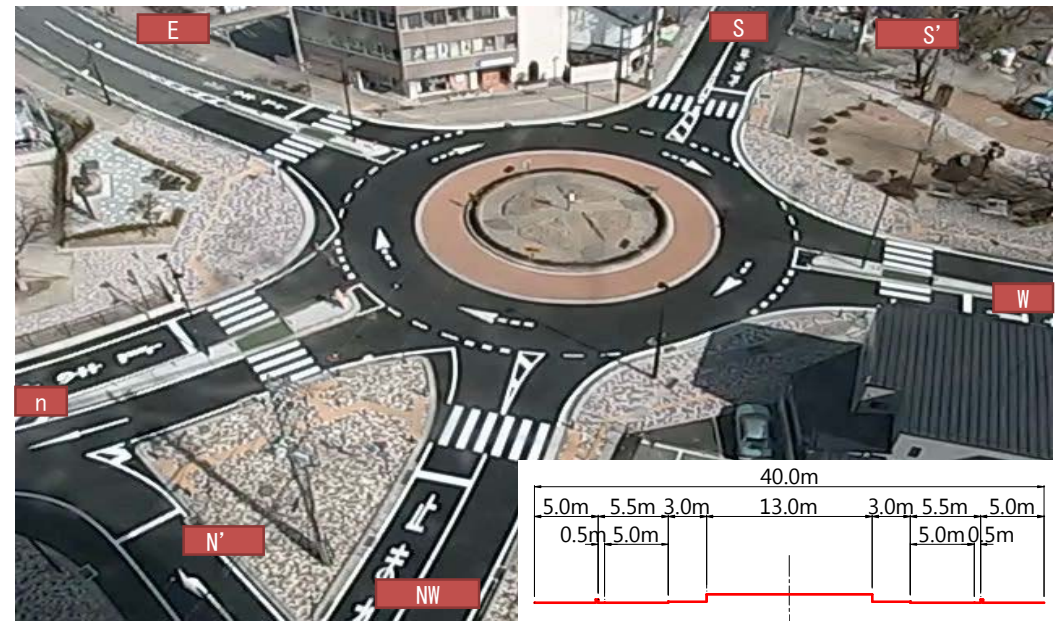


Photo-1 Towa-cho Intersection after Innovation

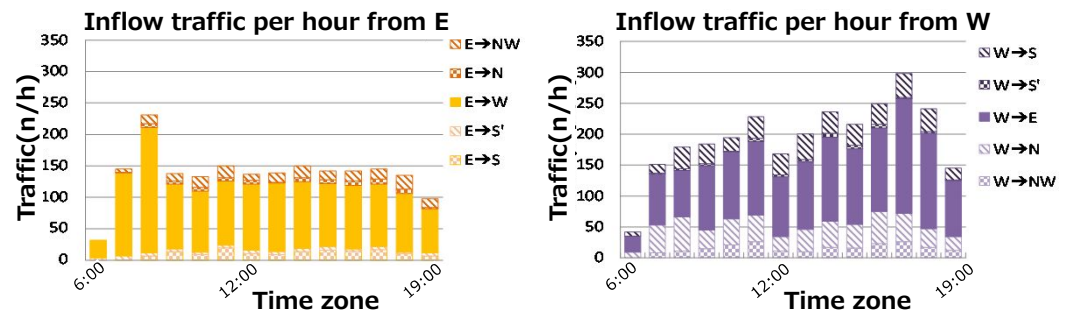


Fig-3 Traffic Characteristics (Traffic volume in every direction)



Photo-3 Transformation from signalized to roundabout intersections

4. Other Related Activities

a) Traffic safety education for elementary school children

- Children in the neighboring elementary schools received traffic safety education about how to use the roundabout intersection.

b) Roundabout Summit in Iida

- A summit was held to promote the future deployment of roundabout intersections in Japan. Approximately 200 people participated from around Japan.



Photo-4 Traffic Safety Education for Elementary School Children



Photo-5 Summit Meeting

5. Summary

a) Successful track record of switching to the roundabout from the existing signalized intersection

- A detailed implementation plan was prepared before starting construction, and the switching from existing signalized to roundabout intersections has been successfully completed for the first time in Japan.
- In planning and implementing this construction, the local government, residents, researchers, and engineers jointly studied and carried out the plan.

b) Trigger to deploy roundabout intersections around Japan

- There have been an increasing number of visitors from around Japan to Iida City to inspect Japan's first switching from a conventional to roundabout intersection.
- In the wake of this, the effectiveness of this type of intersection has been verified in Japan. The Road Traffic Law is revised or the social experiment towards roundabout introduction is conducted.



Photo-6 On-site Inspection